

50. (New) The magnetic device of claim 49, wherein the first magnetic material comprises a first soft-magnetic material, and wherein the at least one magnetic material comprises a second soft-magnetic material in the basic layer and an anti-ferromagnetic material in the layer structure.

51. (New) The magnetic device of claim 49, wherein the first magnetic material comprises a first soft-magnetic material, and wherein the at least one magnetic material comprises a second soft-magnetic material in the basic layer and a hard-magnetic material in the layer structure.

52. (New) The magnetic device of claim 49, wherein the basic layer comprises a ferromagnetic material, and wherein the layer structure comprises an artificial anti-ferromagnetic structure comprising two anti-parallel magnetic layers separated by a metallic intermediate layer.

Remarks

Currently pending claims 33-37, 39, and 42-52 are for consideration by the Examiner. Claims 38 and 40-41 are cancelled herein. Claims 48-52 are new. Claims 33-37, 39, and 42-47 are amended herein.

The Examiner rejected claim 34 under 35 U.S.C. 112, first paragraph.

The Examiner rejected claim 34 under 35 U.S.C. 112, second paragraph.

The Examiner rejected Claims 33 - 35, 43 and 44 under 35 U.S.C. 102(b) as being anticipated by Gallagher et al.

The Examiner rejected claims 36 -41 under 35 U.S.C. 103(a) as being unpatentable over Gallagher et al.

The Examiner rejected claim 42 under 35 U.S.C. 103(a) as being unpatentable over Gallagher et al. in view of Konno.

The Examiner rejected claims 45 - 47 under 35 U.S.C. 103(a) as being unpatentable over

Gallagher et al. in view Ruigrok et al.

35 U.S.C. 112, first paragraph

The Examiner rejected claim 34 under 35 U.S.C. 112, first paragraph, as allegedly “containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 34 refers to the mass of the non-magnetic element as being lighter than the mass of the metallic element but such is not described in the specification.”

In response, Applicant respectfully contends that amended claim 34 is supported in the specification on page 2, lines 26-28.

35 U.S.C. 112, second paragraph

The Examiner rejected claim 34 under 35 U.S.C. 112, second paragraph, as allegedly “being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim refers to the mass of one element as being lighter than another but lightness refers to a weight and mass is distinct from weight.”

In response, Applicant respectfully contends that amended claim 34 does not refer to “lightness”.

35 U.S.C. 102(b)

The Examiner rejected claims 33 - 35, 43 and 44 under 35 U.S.C. 102(b) as being anticipated by Gallagher et al. In response, Applicant respectfully contends that Gallagher does not anticipate claim 33, because Gallagher does not teach each and every feature of claim 33. For example, Chiang does not teach “wherein the peripheral portion circumscribes the central

portion and is integral with the central portion, wherein the thickness of the peripheral portion is less than the thickness of the central portion". Based on the preceding arguments, Applicant respectfully maintains that Gallagher does not anticipate claim 33, and that claim 33 is in condition for allowance. Since claims 34-37, 39, and 42-44 depend from claim 33, Applicant contends that claims 34-37, 39, and 42-44 are likewise in condition for allowance.

35 U.S.C. 103(a)

The Examiner rejected claims 45-47 under 35 U.S.C. 103(a) as being unpatentable over Gallagher et al. in view Ruigrok et al (not identified). The Examiner alleges: "With respect to claim 45, Gallagher et al. show a basic sensor but do not show a complete device. Ruigrok et al. show a field sensor with a yoke to couple the device to the field. It would have been obvious to include the yoke shown by Ruigrok et al. in the Gallagher et al. device to provide functionality."

Applicants respectfully contend that claim 45 is not unpatentable under 35 U.S.C. 103(a), because Gallagher does not teach or suggest each and every feature of claim 20. As an example, Gallagher does not teach or suggest "wherein the mass of the non-magnetic element is less than the mass of a metallic element of the at least one magnetic material". As another example, Gallagher does not teach or suggest "a magnetic yoke in magnetic contact with the first electrode layer" as admitted by the Examiner. Based on the preceding arguments, Applicants respectfully maintain that claim 45 is not unpatentable under 35 U.S.C. 103(a), and that claim 45 is in condition for allowance. Since claims 46-52 depend from claim 45, Applicants contend that claims 46-52 are likewise in condition for allowance.

The Examiner also rejected claims 36-42 under 35 U.S.C. §103(a). Applicant maintains that said rejection of claims 38 and 40-41 is moot, since claims 38 and 40-41 have been cancelled. Additionally, since claims 36, 37, 39, and 42 depend from claim 33, which Applicants

have argued *supra* to be patentable under 35 U.S.C. §102, Applicants maintain that claims 36, 37, 39, and 42 are not unpatentable under 35 U.S.C. §103(a).

Conclusion

Applicant respectfully believes that all pending claims, and the entire application, are in condition for allowance and therefore request favorable action. However, should the Examiner believe anything further is necessary in order to place the application in better condition for allowance, or if the Examiner believes that a telephone interview would be advantageous to resolve the issues presented, the Examiner is invited to contact the Applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,

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Appendix A. Amended Material

Please amend claims 33-37, 39, and 42-47 as follows:

33. (Amended) A magnetic device, comprising:

an first electrode layer including a first magnetic material;

an insulating layer on the first electrode layer; and

a second electrode layer including [a second] at least one magnetic material[, wherein the second electrode layer is on a first portion of the insulating layer and is not on a second portion of the insulating layer], wherein the second electrode layer comprises a basic layer on the insulating layer and a layer structure on the basic layer, wherein the basic layer includes a central portion and a peripheral portion, wherein the central portion and the peripheral portion are each in direct mechanical contact with the insulating layer, wherein the peripheral portion circumscribes the central portion and is integral with the central portion, wherein the thickness of the peripheral portion is less than the thickness of the central portion, and wherein the layer structure effectuates a magnetic pinning of the basic layer.

34. (Amended) The magnetic device of claim 33, wherein the insulating layer comprises a non-magnetic material element, and wherein the mass of the non-magnetic element is [lighter] less than the mass of a metallic element of the second magnetic material.

35. (Amended) The magnetic device of claim 33, wherein the first magnetic material comprises a first soft-magnetic material.

36. (Amended) The magnetic device of claim [33] 35, wherein the [second] at least one magnetic

material comprises:

a second soft-magnetic material in the central portion of the basic layer;
the second soft-magnetic material in the peripheral portion basic layer; and
an anti-ferromagnetic material in the layer structure.

37. (Amended) The magnetic device of claim [33] 35, wherein the [second] at least one magnetic material comprises:

a second soft-magnetic material in the central portion of the basic layer;
the second soft-magnetic material in the peripheral portion basic layer; and
a hard-magnetic material in the layer structure.

39. The magnetic device of claim [38] 35, wherein the [basic layer comprises a ferromagnetic layer] at least one magnetic material comprises:

a ferromagnetic material in the central portion of the basic layer; and
the ferromagnetic material in the peripheral portion basic layer.

42. (Amended) The magnetic device of claim [38] 35, wherein the basic layer comprises a ferromagnetic material, and wherein the layer structure comprises an artificial anti-ferromagnetic structure comprising two anti-parallel magnetic layers separated by a metallic intermediate layer.

43. (Amended) The magnetic device of claim 33, further comprising a protective layer of insulative material on the insulating layer, wherein the protective layer circumscribes the basic layer, and wherein the protective layer is in direct mechanical contact with the basic layer and with the insulating layer.

44. (Amended) The magnetic device of claim 43, wherein the thickness of the protective layer [includes an insulating material] is less than the thickness of the second electrode layer.

45. (Amended) [The magnetic device of claim 33, further comprising] A magnetic device, comprising:

an first electrode layer including a first magnetic material;

an insulating layer on the first electrode layer, wherein the insulating layer comprises a non-magnetic material element;

a second electrode layer including at least one magnetic material, wherein the second electrode layer is on a first portion of the insulating layer and is not on a second portion of the insulating layer, and wherein the mass of the non-magnetic element is less than the mass of a metallic element of the at least one magnetic material; and

a magnetic yoke in magnetic contact with the first electrode layer.

46. (Amended) The magnetic device of claim 45, wherein the magnetic yoke comprises an interruption that includes an insulating material, and wherein the interruption directly contacts a portion of a surface of the first electrode layer.

47. (Amended) The magnetic device of claim [45] 46, wherein the magnetic yoke further comprises a non-magnetic transducing gap that includes [an] the insulating material.